

REVIEWS OF RECENT BOOKS.

Doncaster, L., D.Sc., F.R.S., Fellow of King's College, Cambridge.
The Determination of Sex. Cambridge. The University Press;
1914; price 7s. 6d.; pp. 158.

IN this little book Dr. Doncaster has given an account of our present knowledge of the causes which determine the sex of offspring. He has handled the subject in a most admirable manner. It would be difficult to praise too highly the clear and impartial way in which he marshals his evidence.

Beginning with a short discussion of the biological reasons for the production of two sorts of individuals (males and females), Dr. Doncaster discusses the stage of development at which sex is determined, and shows that in some species at least it must be fixed in the germ, since the eggs which give rise to males and females respectively are of different sizes; further, that the remarkable phenomena of sex-limited inheritance lead to the conclusion that in some cases there must be two kinds of spermatozoa (male-determining and female-determining), in other cases two kinds of eggs (male and female ova). But, as Dr. Doncaster goes on to point out, there is also evidence that in other cases the circumstances of fertilisation determine the sex; for in the frog overripe ova give rise to offspring almost entirely male, whereas eggs from the same individual, fertilised under ordinary circumstances, give rise to a normal proportion of males and females. In other cases, as in the remarkable worm *Bonellia*, sex appears to be determined by whether the larva is allowed to fix itself to a female or not; if it does so, it develops into a diminutive male, otherwise it becomes a female.

Dr. Doncaster then goes on to discuss the remarkable inversion of sex produced by the attacks of the parasite *Sacculina* on Crabs, so ably described by Mr. Geoffrey Smith. This phenomenon leads to the conclusion that there is something fundamentally different in the physiology of the male as compared with that of the female. Indeed, Dr. Doncaster is inclined to uphold the old antithesis of the "catabolic" male and "anabolic" female, so strongly advocated many years ago by Professor Geddes and Professor Thomson.

Dr. Doncaster then approaches the intensely interesting question as to whether any material basis for the assumed difference between male and female ova and male and female-determining spermatozoa can be detected by the microscope. The fascinating "odd chromosome" hypothesis is explained, and many cases where it can be satisfactorily applied are pointed out. But the cases where it breaks down are also put before the reader—and on this point we think that Dr. Doncaster might have given more space to the work of Miss Foote and Miss Strobell, who are the ablest critics of this theory.

The final conclusion reached by Dr. Doncaster, that sex, being a physiological condition, is determined by different factors in different cases—a factor which is sufficient to tip the balance in one direction in one animal being insufficient in another.

We have the greatest pleasure in commending this book to our readers as giving the ablest, clearest, and tersest account of the sex-problem which we have seen.

E. W. MACBRIDE.